

## REMARKS

Claims 1-10, 12-20, 22-35, 37-39 and 42 are pending in this application. Claims 10, 12, 25, 32, 34 and 42 are objected to, claims 1-2, 4-5, 8, 13-20, 22-23, 26-31, 35, 37-38 and 40-42 are rejected, with claims 3, 6-7, 9, 24, 33 and 39 having been withdrawn from further consideration. Claims 1-2, 4-5, 8, 15-20, 22-23, 26-27, 29 and 30 are canceled hereby, and claims 10, 12-14, 25, 28 and 32 are amended hereby.

Responsive to the objection to the drawings, Applicants have traversed in part and have proposed the addition of two new figures as is more particularly described in the Drawings section hereinabove. Applicants submit that the drawings are now in conformance with 37 CFR 1.83(a). Further, Applicants submit that the partial traversal of the objection to the drawings is a bona fide attempt to fully and completely respond to the Office Action and to advance the application to issue.

Further, Applicants have amended the Specification to describe the new figures. More particularly, the Drawings section has been amended to include a brief description of the new figures, i.e., figures 18a and 18b. Two new paragraphs have been added to the Detailed Description section of the Specification describing the new drawings. It should be noted that the text of those new paragraphs is based upon the relevant claims which describe the

structure shown in the new figures. Thus, Applicants submit that the added paragraphs contain no new matter.

Responsive to the objection to claims 1, 5, 17, 20 and 30 on the basis of various informalities, Applicants point out that claims 1, 5, 17, 20 and 30 have  
5 been canceled hereby. Further, Applicant has carefully reviewed and amended the pending claims to remove other informalities that will be apparent to the Examiner upon review of the claims listing. Applicant submits that the pending claims are now in allowable form, and respectfully request withdrawal of all objections.

10 Claims 1, 2, 15, 17, 18, 20 and 26 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,437,419 (Bhalla, et al.). Applicants respectfully point out, however, that claims 1, 2, 15, 17, 18, 20 and 26 have been cancelled hereby. Accordingly, Applicants request withdrawal of the rejection and allowance of the pending claims.

15 Claims 1, 2, 4, 8, 13-16, 18-20, 23 and 26-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bhalla, et al., in view of the admitted prior art. Applicants respectfully point out that claims 1, 2, 4, 8, 15-16, 18-20, 23 and 26-27 have been cancelled hereby and, accordingly, Applicants request withdrawal of the rejection as applied to those claims.

20 Responsive to the rejection of claims 13-14 under 35 U.S.C. §103(a) as being unpatentable over Bhalla, et al., in view of the admitted prior art, Applicants

have amended claim 13 to clarify that it is not a product-by-process claim as asserted in the rejection. Further, Applicants have rewritten claim 13 to be in independent form to include all the limitations of its base and any intervening claims, and submit that it is now in condition for allowance.

5           In rejecting claim 13, the Examiner characterized the limitation recited therein, i.e., that the length of the source segments depended upon their proximity to the center of the IGBT die, as a product-by-process limitation that did not structurally distinguish the present invention over the cited references. Applicants submit that the cited limitation is not a product-by-process limitation,  
10       and that the cited references, alone or in combination, fail to disclose or suggest such a limitation, and that therefore the rejection is improper.

          A product-by-process claim defines a product in terms of the method used to manufacture that product. A product-by-process claim defines the claimed product in terms of the process by which it is made. (*In re Luck*, 476 F.2d 650,  
15       177 USPQ 523 (CCPA 1973), and see, MPEP 2173.05(p)). Such claims have a general format of, for example: a device manufactured by a process comprising x, y, and z.

          In contrast, claim 13 as amended recites in part “said source segments having respective and predetermined lengths, said predetermined lengths being  
20       dependent at least in part upon the proximity of said source segments to a center of the IGBT die.” (*Emphasis Added*). Applicants submit that such a limitation is

not a product-by-process limitation, but is rather a conventional product or structural limitation.

The lengths of the channel resistors (or source segments) may be different depending upon their location. In general, shorter length source  
5 segments are preferable closer to the center of the die to promote the thermal ballasting effect of the present invention. (see page 10, lines 24-26 of the present specification). Thus, the source segment lengths are predetermined dependent upon and in light of their respective proximities to the center of the die. The lengths of the source segments are not determined by or dependent upon a  
10 process of manufacture, nor does a process of manufacture determine the lengths of the source segments. Thus, claim 13 is not a process-by-product claim nor does claim 13 contain a product-by-process limitation. Therefore, Applicants submit that the rejection of claim 13 on a product-by-process basis is improper.

15 Further, Applicants submit that the cited references, alone or in combination, fail to disclose or suggest source segments having predetermined lengths that are determined by the proximity of the source segments to the center of the IGBT die, as recited in part by amended claim 13. Accordingly, Applicants respectfully request withdrawal of the rejection.

20 Lastly, Applicants have rewritten claim 13 to be in independent form and to include all the limitations of its base claim and any intervening claim(s).

Accordingly, Applicants submit that claim 13 is now in allowable form.

For the foregoing reasons, Applicants submit that claim 13 is now in condition for allowance. Further, Applicants submit that claim 13 is also now in allowable form. Therefore, Applicants respectfully request withdrawal of the  
5 rejections and allowance of claim 13 and claim 14 depending therefrom.

Claim 14 was also rejected as having a product-by-process limitation, i.e., the length of the source segments are dependent upon a desired local SCIS density, that did not structurally distinguish the present invention over the cited references. Responsive thereto, Applicants have amended claim 14 to clarify  
10 that the lengths of the source segments are predetermined, and not dependent upon or determined by any process of manufacture. Accordingly, Applicants submit that claim 14 is also now in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 35 and 37 under 35 U.S.C. §103(a)  
15 as being unpatentable over Blanchard in view of Applicants' admitted prior art and further in view of U.S. Patent No. 5,119,153 (Korman), Applicants respectfully traverse.

Claim 35 recites in part "an insulating layer entirely covering the source stripes and having vias above the source contact regions". Neither of Blanchard  
20 or Korman discloses or suggest, alone or in combination, a single insulating layer covering the source stripes, nor a single insulating layer covering the source

stripe and having vias over the source contact regions, as recited in part by claim 35 and shown in Applicants proposed new drawing Fig. 18a.

Further, the Examiner has not asserted that Blanchard or Korman disclose or suggest a single insulating layer covering the source stripes, nor a single  
5 insulating layer covering the source stripe and having vias over the source contact regions. Therefore, a *prima facie* case of obviousness has not been established.

For the foregoing reasons, Applicants respectfully submit that claims 35 and claims 37-38 depending therefrom are in condition for allowance in their  
10 present forms, and respectfully request same.

Claims 5, 22, 35 and 38 were rejected under 35 U.S.C. §103(a) as being unpatentable over Blanchard in view of Applicants' admitted prior art and further in view of U.S. Patent No. 5,119,153 (Korman). Applicants respectfully point out that claims 5 and 22 have been cancelled hereby, and respectfully traverse the  
15 rejection in regard to claims 35 and 38.

Claim 35, as discussed above, recites in part "an insulating layer entirely covering the source stripes and having vias above the source contact regions". Neither of Bhalla or Korman discloses or suggests, alone or in combination, a single insulating layer covering the source stripes, nor a single insulating layer  
20 covering the source stripe and having vias over the source contact regions, as recited in part by claim 35 and shown in Applicants proposed new drawing Fig.

18a.

Further, the Examiner has not asserted that Bhalla or Korman disclose or suggest a single insulating layer covering the source stripes, nor a single insulating layer covering the source stripe and having vias over the source  
5 contact regions. Therefore, a *prima facie* case of obviousness has not been established.

For the foregoing reasons, Applicants respectfully submit that claim 35 and claim 38 depending therefrom are in condition for allowance in their present forms, and respectfully request same.

10 Claims 28-31 were rejected under 35 U.S.C. §103(a) as being unpatentable over the admitted prior art. Claim 28 has been amended to include the subject matter of original claim 29, which is canceled hereby. More particularly, claim 28 has been amended to recite in part “an insulating layer  
entirely covering the trench gate and the source stripe regions, a plurality of vias  
15 in the insulating layer and over the source contact regions” and “a source contact layer over the insulating layer and extending through the vias therein to contact the source contact regions”. (*Emphasis Added*). Applicants submit that the admitted prior art fails to disclose or suggest such limitations.

The device depicted in Fig. 4B has an insulating layer over the gate, and  
20 respective layers partially covering the source stripes. The source contact layer contacts the source stripes in the opening formed between the different insulating

layers. The device depicted in Fig. 4B does not have an insulating layer that entirely covers the gate and source stripe regions. The device depicted in Fig. 4B does not have a source contact layer disposed over the insulating layer that extends through vias to contact source contact regions. Thus, the device  
5 depicted in Fig. 4B, whether considered alone or in combination with the other admitted prior art, fails to disclose or suggest an insulating layer entirely covering the trench gate and the source stripe regions, a plurality of vias in the insulating layer over the source contact regions, and a source contact layer over the insulating layer that extends through the vias to contact the source contact  
10 regions, as recited in part by amended claim 28.

Further, the Examiner has not asserted that the admitted prior art discloses or suggests an insulating layer entirely covering the trench gate and the source stripe regions, a plurality of vias in the insulating layer over the source contact regions, and a source contact layer over the insulating layer that extends  
15 through the vias to contact the source contact regions, as recited in part by amended claim 28. Therefore, a *prima facie* case of obviousness has not been established.

For the foregoing reasons, Applicants submit that claim 28 and claims 30-31 depending therefrom are now in condition for allowance, which is hereby  
20 respectfully requested.

The Examiner indicated that claims 10, 12, 25, 32 and 42 would be



allowable if rewritten in independent form to include all the limitations of their base claim(s) and any intervening claim(s), for which courtesy the Examiner is thanked. Applicants have rewritten claims 10, 12, 25, 32 in independent form and keeping in mind the comments offered by the Examiner, and submit that

5 claims 10, 12, 25 and 32 are now in allowable form. Applicants did not, however, rewrite claim 42 in independent form since claim 42 depends from claim 32, which is now in condition for allowance for the reasons given above. Thus, Applicants submit that claim 42 is also now in condition for allowance.

Accordingly, Applicants respectfully request withdrawal of the objections and

10 allowance of claims 10, 12, 25, 32 and 42.

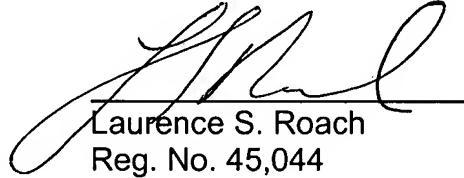
For all the foregoing reasons, Applicants submit that the pending claims are definite and do particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Moreover, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject

15 matter of the pending claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

The Examiner is invited to telephone the undersigned in regard to this  
Amendment and the above identified application.

Respectfully submitted,

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Date

  
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